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REMARKS

Entry of this response is appropriate under 37 CFR §1.116, since no new claims or issues are presented herein, and the Examiner will most certainly want to take the opportunity to correct, or at least clarify, his position prior to proceeding to Appeal.

Claims 1-23 are all the claims presently pending in the application.

It is noted that the claim amendments are made only for more particularly pointing out the invention using local practice, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicants specifically state that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 1-14 and 20-23 stand rejected under 35 USC §102(e) as anticipated by US Patent 6,834,965 to Raskar et al. Applicants gratefully acknowledge the Examiner's indication that claims 15-19 would be allowable if rewritten in independent format. However, Applicants believe that all claims are allowable and decline to rewrite these claims at this time.

This rejection based on Raskar is respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

As described and defined in, for example, claim 1, the claimed invention is directed to a system for correcting approximate expressions used in geometrical correction of projected images. A projector operates under the control of a program so as to project an image emitted from the projector onto a display surface.

The projector includes means for performing a geometrical transformation on a projected image emitted from the projector in accordance with the shape of a projection surface of the screen using a predetermined approximate expression to correct the projected image for distortion due to the shape of the projection surface of the screen and a value entered for substitution into at least one of a variable and a parameter to transform the predetermined approximate expression.

Conventional methods such as those described beginning at line 18 on page 1 of the specification, require a large amount of memory so that corrected position data be stored for each pixel of the display.

The claimed invention, on the other hand, eliminates this necessity that each pixel corrected data be stored in memory, by allowing a user to provide input corrections for parameters that describe the shape of the screen. These corrections thereby allow the corrected pixel data to be calculated, rather than stored as a mapping correction, thereby eliminating the need for large amounts of memory for storing mapping corrected data for each pixel of the image.

II. THE PRIOR ART REJECTION

The Examiner alleges that Raskar teaches the claimed invention defined by claims 1-14 and 20-23. Applicants submit, however, that there are elements of the claimed invention which are neither taught nor suggested by Raskar.

Applicants do not repeat the arguments of the previous Amendment filed on October 25, 2005, since the Examiner seems to have studied it in detail and it will be repeated essentially in Applicants' Appeal Brief. Instead, Applicants response herein responds to the Examiner's Response to Arguments in paragraph 5, beginning on page 6 of the Office Action.

In this response, the Examiner's first significant argument relates to the means-plus-function language of claims 1 and 3, wherein the Examiner's position is that this language is insufficient to rely upon a user's manual input to distinguish from Raskar, since these claims fail to provide a means for providing the value.

In response, Applicants submit that the rejection currently of record requires much more support, prior to proceeding to Appeal, than merely pointing out that claims 1 and 3 fail to describe an "input means", since the rejection currently of record fails to address the plain meaning of these two independent claims even without the "input means" language being present.

That is, the Examiner seems to fail to understand that the final claim limitation does not terminate at the phraseology "... means for performing a geometrical transformation on a projected image", as implied by the Examiner. Rather, as exemplified by claim 1, this

description continues: "... <u>using a predetermined approximate expression</u> to correct the projected image for distortion and a <u>value entered for substitution</u> into at least one of a variable and a parameter to transform said predetermined approximate expression."

Contrary to the Examiner's characterization, Applicants submit that the automatic technique of Raskar does <u>not</u> satisfy the <u>plain meaning</u> of this final limitation, as such language would be interpreted by one having ordinary skill in the art, since there is <u>no</u> <u>predetermined approximate expression</u> involved therein and, indeed, this reference inherently teaches against making any type of assumptions (e.g., using an approximate expression) for the display surface because of its implementation of <u>discovering the characteristics of the</u> <u>projection surface by projecting a structured pattern onto the surface</u>. The Examiner seems to be confusing the ability of the present invention to be able to project a corrected image onto surfaces similar to those mentioned in Raskar.

However, even if there are <u>similarities in result,</u> such as the <u>ability to project a</u> <u>corrected image on these surfaces,</u> the <u>method</u> in Raskar inherently <u>differs</u> from that of the present invention, which the Examiner has conceded. Applicants submit that the <u>different</u> <u>method</u> of Raskar inherently shows up as failing to satisfy the plain meaning of this independent claim limitation. That is, there is <u>no predetermined approximate expression</u>s involved in Raskar, since its method relies upon a <u>systematic discovery of the projection</u> <u>surface,</u> rather than <u>starting with</u> a predetermined approximate expression that would be required for geometrical correction, as required by the plain meaning of the claim language.

As explained beginning at line 63 of column 5, Raskar begins this discovery of the projection surface by projecting a structured pattern, such as a square grid, onto the display surface so that, as explained beginning at line 1 of column 6, a polygon mesh can be developed to map points of that pattern with the coordinate frame of the projector.

Moreover, the Examiner's discussion in the final half of page 7 indicates that the Examiner is confused about the role of the "least squares fit" technique used in Raskar. That is, contrary to the Examiner's characterization, least squares fit is <u>not</u> a mathematical method that mysteriously outputs a linear equation or an equation of a parabola or sinusoidal waveform. The method is clearly described at lines 35-37 of column 5 as merely the tool used to develop the mapping between points of the projected structured pattern and points of the coordinate frame of the projector, a method to correlate points between two coordinate

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systems. It does not result in one of these equation types nor does it in any way depend upon a "predetermined approximation of the surface", since it is used to discover a precise definition of that projection surface, "point-by-point", by using the mapping between the two coordinate systems.

In contrast, the present invention starts out by using a "predetermined approximate expression" that is already known to correspond to the shape of the projection surface. The "input value" described variously in the claims is a correction or substitution for one of the variables or parameters in this "predetermined approximate expression".

Stated slightly differently, the present invention starts out by already knowing the approximate shape of the projection surface. In contrast, Raskar makes no presumptions about the approximate shape, but, instead, precisely calculates the surface shape by developing a coordinate mapping, using a predetermined structured pattern that is projected onto that surface. In Raskar there are no "predetermined approximate expressions" involved, since camera data that images the projected "test pattern" will be used so that precise correlation between points of that surface can be made for image data that will be subsequently projected from the projector onto the surface. This method of mapping points by using a projected "test pattern" is an entirely different principle of operation from that of the present invention, wherein an approximation of the surface is already known.

Hence, turning to the clear language of the claims, because of this lack of using an initial approximation expression for the projection surface, in Raskar there is no teaching or suggestion of: "... means for performing a geometrical transformation on a projected image emitted from said projector in accordance with a shape of a projection surface of a screen, using a predetermined approximate expression to correct the projected image for distortion and a value entered for substitution into at least one of a variable and a parameter to transform said predetermined approximate expression", as required by the final limitation of independent claim 1. Independent claim 3 has similar language.

Relative to recently-added independent claim 13, in Raskar, there is no teaching or suggestion of storing: " ... a predetermined approximate expression for correction a projected image for distortion ...."

If the Examiner wishes to maintain the rejection based on Raskar, Applicants respectfully request that a specific line and column be cited that demonstrates a

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predetermined approximate expression, since the surface discovery method of using a projected "test pattern" is an entirely different technique, even if both methods are capable of projecting images onto various similar surfaces.

The rejection currently of record incorrectly confuses similarity of results with similarity of method. The method of Raskar does not satisfy the plain meaning of the claim language because this reference systematically discovers the shape of the projection surface. It does not store any predetermined approximate expressions for the surface.

Therefore, again, if the Examiner wishes to maintains the rejection based on Raskar, it is requested that specific line/column cites be provided in the next response, prior to proceeding to Appeal. Should the Examiner decline to provide this information in accordance with the requirement in MPEP §707.07(f), Applicants will submit a Petition that such specific information be provided by the USPTO prior to proceeding to an Appeal, since this information is critical to proceeding with prosecution.

III. FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicant submits that claims 1-23, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time,
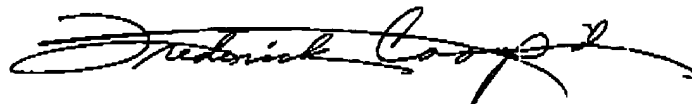
Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

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The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.
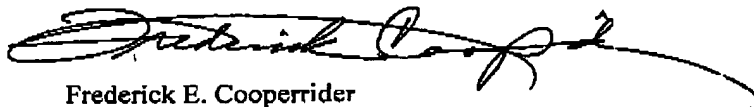
Respectfully Submitted,

Date: 3/6/06

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CERTIFICATION OF TRANSMISSION

I certify that I transmitted via facsimile to (571) 273-8300/-2128 this Amendment under 37 CFR §1.116 to Examiner Andrew T. Sever on March 6, 2006.

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